Claims

I claim:

1. A method of transporting an pharmacologically active form of Substance P, or neuropeptide, across the blood-brain barrier into the central nervous system of a living subject using the chimeric hybrid molecule comprising a cyclic alkaloid moiety which binds as an agonist to a mammalian or human mu (μ) opioid receptor and a peptide moiety which binds as an agonist to a mammalian/human substance P.

2. A method of transporting a pharmacologically active form of substance P, or neuropeptide, across the blood-brain barrier into the central nervous system of a living subject using the active metabolite of morphine, morphine 6-glucuronide, contained within chimeric hybrid molecules wherein:

a. One moiety of the chimeric hybrid molecule binds as an agonist to the mu (μ) opioid receptor and the other moiety of which binds as an agonist to the substance P receptor comprised of:

(i) chemically modified morphine in which morphine covalently linked through its 6'OH group comprises the mu (μ) opioid receptor agonist moiety;

(ii) the substance P fragment N-acetyl-SP [3-11]: sequence of Ac-KPQQFFGLM-NH2 (SEQ. ID. NO. 1), covalently linked through its ε (epsilon) amino group, which comprises the substance P receptor agonist moiety; and

(iii) the six carbon carbohydrate d-glucuronic acid, covalently cross linking morphine through its 6'OH group via an o-glycosidic bond to the ε (epsilon) amino group of the substance P fragment N-acetyl-SP [3-11] via a pseudo peptide bond, which comprises a compact molecular hinge linking the two moieties; or

b. One moiety of the chimeric hybrid molecule binds as an agonist to the mu (μ) opioid receptor and the other moiety of which binds as an agonist to the substance P receptor comprised of:

(i) chemically modified morphine in which morphine covalently linked through its 6'OH group comprises the mu (μ) opioid receptor agonist moiety;

(ii) the substance P fragment SP [5-11]: sequence of QQFFGLM-NH2 (SEQ. ID. NO. 2), covalently linked through its α (alpha) amino group, which comprises the substance P receptor agonist moiety; and

(iii) the six carbon carbohydrate d-glucuronic acid, covalently cross linking morphine through its 6'OH group via an o-glycosidic bond to the α (alpha) amino group of the substance P fragment SP [5-11] via a pseudo peptide bond, which comprises a compact molecular hinge linking the two moieties, or

c. A chimeric hybrid molecule one moiety of which binds as an agonist to the mu (μ) opioid receptor and the other moiety of which binds as an agonist to the substance P receptor comprised of:

(i) chemically modified morphine in which morphine covalently linked through its 6'OH group comprises the mu (μ) opioid receptor agonist moiety;

(ii) the substance P fragment SP [7-11]: sequence of FFGLM-NH2 (SEQ. ID. NO. 3), covalently linked through its α (alpha) amino group, which comprises the substance P receptor agonist moiety; and

(iii) the six carbon carbohydrate d-glucuronic acid, covalently cross linking morphine through its 6'OH group via an o-glycosidic bond to the α (alpha) amino group of the substance P fragment SP [7-11] via a pseudo peptide bond, which comprises a compact molecular hinge linking the two moieties.